

WHAT IS CLAIMED IS:

1. A fluorescent glass comprising:

Al<sub>2</sub>O<sub>3</sub> of 15 to 50 mol%;

SiO<sub>2</sub> of 0 to 80 mol%;

5 an oxide of 5 to 85 mol% in total comprising at least one of B<sub>2</sub>O<sub>3</sub>, Ga<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, Ta<sub>2</sub>O<sub>5</sub>, Sb<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>5</sub>, La<sub>2</sub>O<sub>3</sub>, and Yb<sub>2</sub>O<sub>3</sub>; and

a rare earth ion.

10 2. A fluorescent glass according to claim 1, wherein said oxide comprises B<sub>2</sub>O<sub>3</sub> of 5 to 85 mol%.

3. A fluorescent glass according to claim 1, wherein said oxide comprises at least one oxide of 5 to 85 mol% in total selected from Ga<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, Ta<sub>2</sub>O<sub>5</sub>, Sb<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>5</sub>, La<sub>2</sub>O<sub>3</sub>, and Yb<sub>2</sub>O<sub>3</sub>, except said B<sub>2</sub>O<sub>3</sub>.

15 4. A fluorescent glass according to claim 4, wherein said rare earth ion comprises an Er ion in a weight proportion of 2000 wt.ppm or more.

5. An optical amplification waveguide amplifying signal light under supply of pumping light, comprising:

20 a core region which extends along a predetermined axis and through which the signal light and pumping light propagates, at least a part of said core region comprised of a fluorescent glass according to claim 1; and

25 a cladding region provided on an outer periphery of said core region.

6. An optical amplification waveguide according to claim 5, wherein said core region comprises an inner core comprised of said fluorescent glass; and an outer core provided on an outer periphery of said inner core and comprised of a silica-based glass as a principal component.

7. An optical amplification waveguide according to claim 6, wherein said outer core comprises at least one of  $\text{Al}_2\text{O}_3$ ,  $\text{GeO}_2$ ,  $\text{P}_2\text{O}_5$ , Cl, and F.

8. An optical amplification waveguide according to claim 5, wherein said core region comprises an inner core comprised of a silica-based glass as a principal component; and an outer core provided on an outer periphery of said inner core and comprised of said fluorescent glass.

9. An optical amplification waveguide according to claim 8, wherein said inner core contains at least one of  $\text{Al}_2\text{O}_3$ ,  $\text{GeO}_2$ ,  $\text{P}_2\text{O}_5$ , Cl, and F.

10. An optical amplification waveguide according to claim 5, wherein said cladding region, provided on the outer periphery said core region, has a refractive index lower than that of said core region and has a melting point of 1400 °C or more.

11. An optical amplification module comprising:  
an optical transmission medium having at least a part comprised of a fluorescent glass according to

claim 1; and

a pumping light supply system for supplying  
pumping light into said optical transmission medium.

12. An optical amplification module comprising:

5 an optical amplification waveguide according to  
claim 5; and

a pumping light supply system for supplying  
pumping light into said optical amplification  
waveguide.

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